

## CLAIMS

- 1    1. A method of imaging portions of a workpiece located within a field of
- 2    view of an imaging system, the workpiece having features which are to be
- 3    detected with the imaging system, the method comprising:
  - 4         illuminating a first portion of the workpiece from a first combination
  - 5         of illumination positions and reduced illumination positions so as to limit a
  - 6         first distribution of energy reflected specularly from a workpiece location
  - 7         corresponding to the first portion;
  - 8         generating output signals to produce image data representative of an
  - 9         image of the first portion;
  - 10        illuminating a second portion of the workpiece from a second combi-
  - 11        nation of illumination positions and reduced illumination positions so as to
  - 12        limit a second distribution of energy reflected specularly from a workpiece
  - 13        location corresponding to the second portion, the second combination being
  - 14        non-identical to the first combination as a result of a position of the work-
  - 15        piece portion within the field of view of the imaging system;
  - 16        generating output signals to produce image data representative of an
  - 17        image of the second portion; and

18           detecting the features in images of the first and second image portions  
19        based on similarities and differences in the images.

1        2.      The method of claim 1 wherein illuminating the first portion and il-  
2        luminating the second portion are carried out concurrently.

1        3.      The method of claim 1 further wherein the surface features are ma-  
2        chine readable marks.

1        4.      The method of claim 1 further comprising controllably positioning  
2        the field of view of the imaging system after illuminating the first portion so  
3        as to view the second portion with the imaging system.

1        5.      The method of claim 4 wherein controllably positioning is carried out  
2        with a computer-controlled galvanometer-mounted pivotal mirror having a  
3        maximum deflection angle, wherein a maximum field of view of the imag-  
4        ing system is limited by the mirror deflection angle.

1    6.    The method of claim 3 further comprising moving the workpiece  
2    relative to the imaging system after illuminating the first portion so as to  
3    view the second portion with the imaging system.

1    7.    The method of claim 6 wherein moving is carried out with an X-Y  
2    stage.

1    8.    The method of claim 1 wherein the features are marks on a semicon-  
2    ductor wafer.

1    9. The method of claim 1 wherein the features are laser scribed marks on the  
2    workpiece, detecting is carried out with by means of a machine vision proc-  
3    essor, and wherein illuminating the first and second combinations of illumina-  
4    tion positions and reduced illumination positions introduces sufficient  
5    contrast between the features and a background to detect the features at any  
6    angular location within a field of view of the imaging system.

1    10. The method of claim 1 further including irradiating the workpiece with a  
2    laser beam to modify a workpiece surface property wherein a feature is pro-  
3    duced by interaction of the laser beam and the workpiece.

- 1    11. A method of imaging portions of a workpiece comprising:
- 2                 illuminating the workpiece from an illumination position so as to
- 3                 produce reflected energy from at least first and second portions of the
- 4                 workpiece;
- 5                 attenuating, at a first location between an illumination position and an
- 6                 image location, a first portion of the reflected energy so as to limit the dis-
- 7                 tribution of reflected energy incident on an image location corresponding to
- 8                 a first portion of the workpiece;
- 9                 generating output signals to produce image data representative of an
- 10          image of the first portion;
- 11          attenuating, at a second location between an illumination position and
- 12          an image location, a second portion of the reflected energy so as to limit the
- 13          distribution of reflected energy incident on an image location correspond-
- 14          ing to a second portion of the workpiece;
- 15          generating output signals to produce image data representative of an
- 16          image of the second portion; and
- 17          detecting the features in images of the first and second image portions
- 18          based on similarities and differences in the images.

1    12. The method of claim 11 wherein attenuating the first and second por-  
2    tions is carried out concurrently.

1    13. The method of claim 11 further comprising irradiating the workpiece  
2    with a laser beam to modify a workpiece surface property wherein a surface  
3    feature is produced by interaction of the laser beam with the workpiece.

1    14. The method of claim 11 wherein attenuating comprises controllably  
2    positioning at least one baffle in a path between an illumination position and  
3    an image location.